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ABSTRACT

Public awareness and concern for our natural environment have rapidly increased. With new demands for knowledge and action concerning all aspects of environmental quality, schools have begun to incorporate into their curriculums new programs emphasizing environmental awareness and appreciation at all age levels. To bring students into further contact with the outdoor environment and to expand their programs beyond the classroom, the Lansing School District will provide a new outdoor learning center to facilitate these new environmental programs. This brochure is a research study into the comprehensive planning, programing, and development of the center. (Sketches may photograph poorly.) (Author/MLF)

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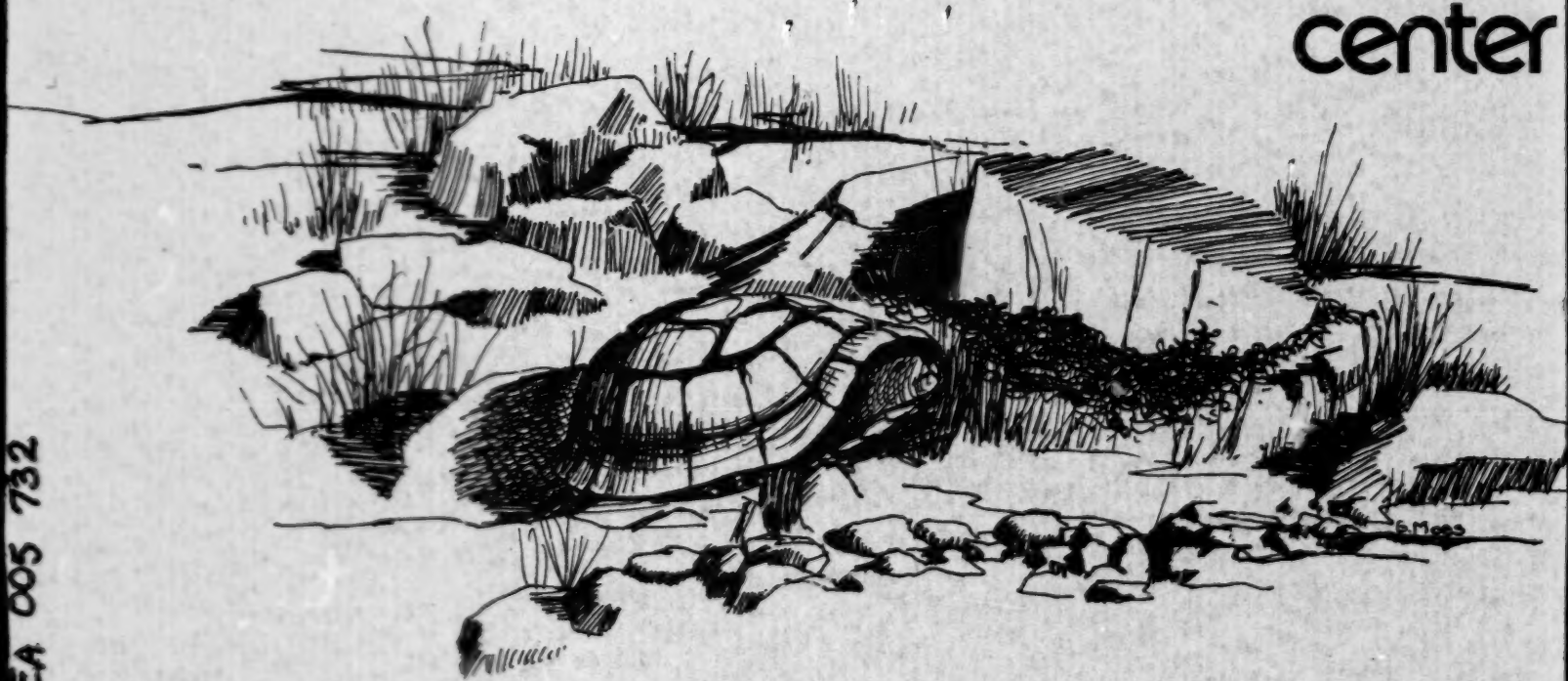
environmental education center



EA 005 732

Public awareness and concern for our natural environment has rapidly increased. With new demands for knowledge and action concerning all aspects of environmental quality, schools have begun to incorporate into their curriculums new programs emphasizing environmental awareness and appreciation at all age levels. To bring students into further contact with the outdoor environment and to expand their programs beyond the classroom, the Lansing School District will provide a new outdoor learning center to facilitate these new environmental programs. This brochure is a research study into the comprehensive planning, programming, and development of an Environmental Education Center for the Lansing School District by the Warren Holmes Company and Kenneth Black Associate Architects of Lansing.

the program

history of camping

As early as 1958, school camping as a voluntary program originated in the Lansing area with such schools as Forest View, Sheridan Road, and North School when they were not yet a part of the Lansing School District. In 1961, school camping programs were implemented as part of the School District with Northwestern Elementary School becoming one of the first schools to participate in the program. From 1961 to 1970, popularity for the camping program increased and campsites were sought in the Yankee Springs Recreational Area located in southwest Michigan and operated by the Michigan Department of Natural Resources. These campsites such as Chief Noonday Camp and Long Lake Camp were used during these years and provided the School District with the needed space and accommodations to carry out the program.

By 1970, the number of participating schools grew to eighteen. Because of the policy changes at the Yankee Springs Campsites and limited available vacancies, Lansing was forced to look elsewhere for other sites to implement their programs. From 1970 to the present, Lansing has been operating at the Tall Timbers Camp near Climax, Michigan. Since this time, the program has expanded to include 31 schools with additional staff having been provide for each school in the form of adult staff members, student teachers, and student aides.

The present camping program usually consists of a one-week's experience starting Monday and lasting through Friday and is available to all age levels in the Lansing School District. Camp costs are borne by each participating school. Various means of fund raising projects have been implemented by most schools to assist in defraying program costs.

The SEE (Science and Environmental Education Center) is responsible for arranging and assisting schools in the development of their programs. It is the intent of the district that each school develop their own individualized program. This program should reflect a cooperating venture between children, teacher, principal and parents in the development of the instructional program and assisting in developing a means for funding.

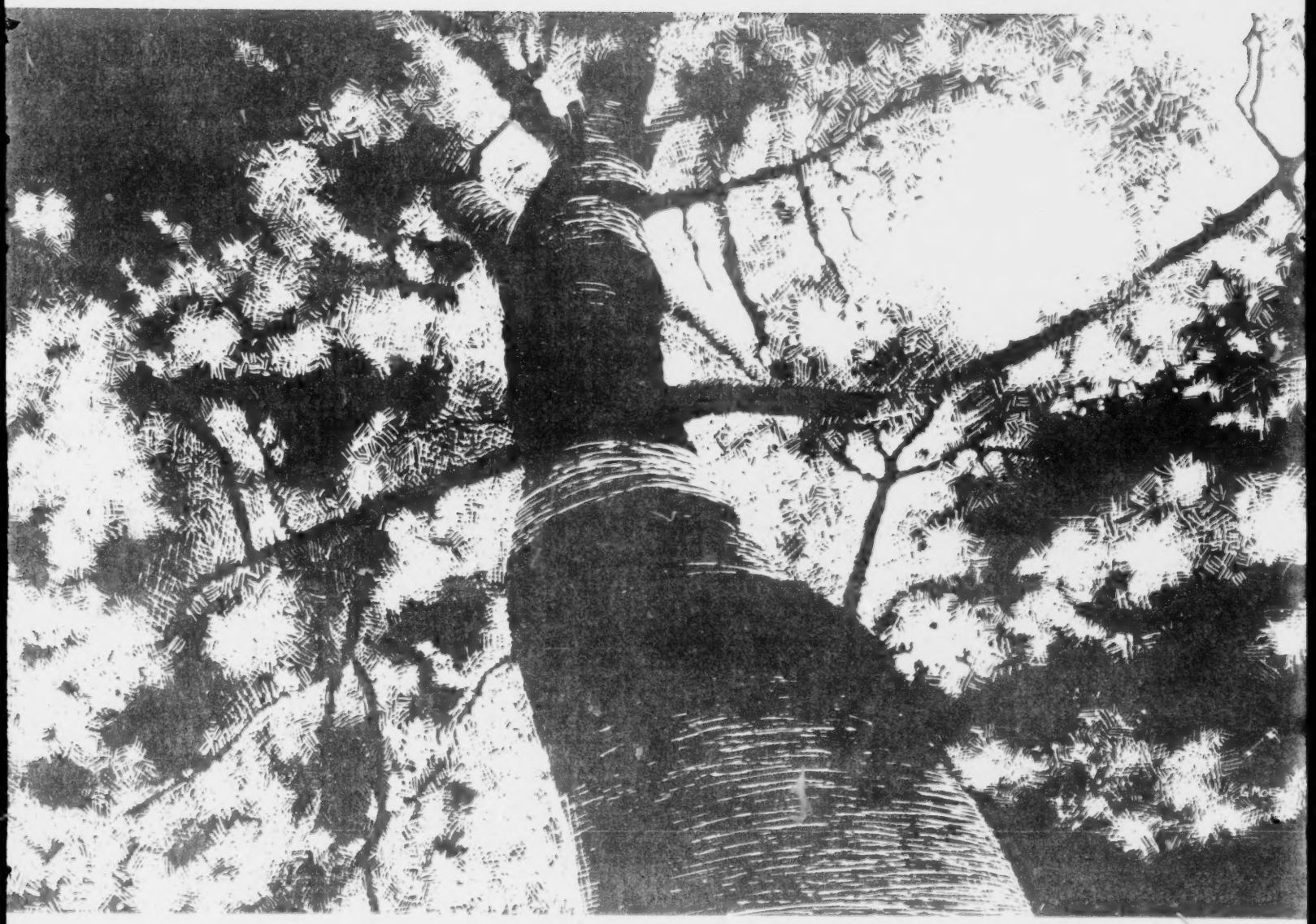
Through the SEE Center, provisions have been made to assist schools in developing individual programs through consultant services and through workshop activities. In addition, back-up staff personnel are provided for each school along with field, craft, visual, and recreational supplies.

instructional concept

general philosophy

It is the aim that the Camping Program reflect upon the general goals of the total Environmental Education Program for the Lansing School District. Those goals are to develop within each individual the knowledge and respect necessary for the awareness, appreciation, maintenance, protection and improvement of the physical environment.

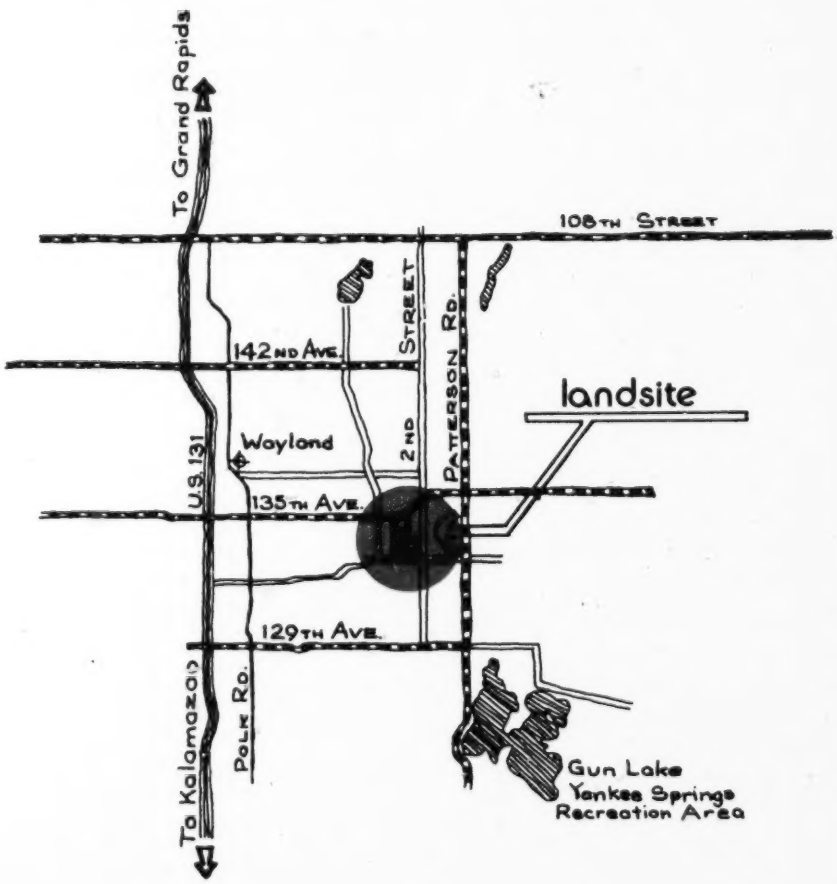
Activities should reflect the integration and correlation of existing school curriculum in all grade levels and subject matter areas. With each individual program and activity experienced through the Environmental Education Program, children will learn to understand and appreciate one of our greatest resources, the natural environment.



the site

DISTANCE CHART OF SURROUNDING FEATURES

Lansing	60 miles
Kalamazoo	25 miles
Hastings	17 miles
Hospital	17 miles
Allegan State Park	15 miles
Yankee Springs Beach and Boat Launch	8 miles
Yankee Springs Museum	12 miles
Chief Noonday Camp	9 miles
Long Lake Camp	9 miles
Kellogg Forest	20 miles
Kellogg Bird Sanctuary	20 miles
Horseback Riding	12 miles



objectives

In keeping with its general philosophy and instructional concepts, the goals of the Environmental Education Program must now be adapted to the physical needs and requirements of the new Allegan County Landsite. This site, covering approximately 158 acres, offers a wide range of opportunities for study and observation of its natural features. To use these features to their fullest learning potential, three main objectives must be clearly defined to set up a development program for the new Environmental Education Center:

1. To maintain, preserve, and protect the physical features within the site. The delicate balance between the many existing ecological communities must be maintained to give maximum learning opportunities to visiting students.

2. To enhance the goals of the educational program and provide for flexibility and variety of both educational and recreational activities for all age groups visiting the center.

3. To develop such things as buildings, access roads, and septic disposal systems that will not only meet the needs of the educational program, the students, and the visitors, but will also be unobtrusive and blend with their natural settings.

To provide students with the opportunity to increase their sensit
and curiosity for the physical environment, these objectives must
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objectives to maintain a successful Environmental Education Program.

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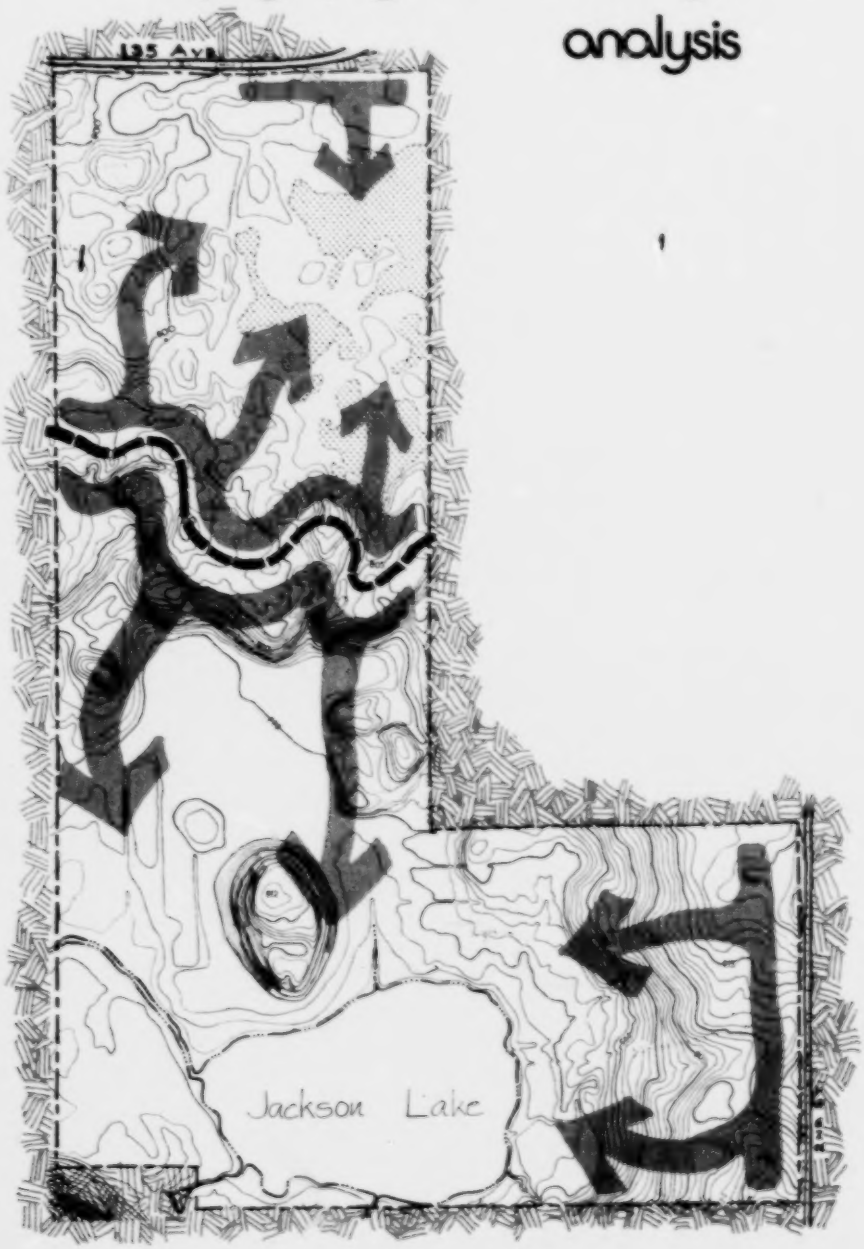
To provide students with the opportunity to increase their sensitivity, appreciation, and curiosity for the physical environment, these objectives must be followed during the entire development program. The final plans for development must reflect these objectives to maintain a successful Environmental Education Program.

site analysis

The first stage of the development program is a comprehensive analysis of the existing physical features within and around the site. The location of existing features and their relationship to one another must be studied carefully. The existing features and their importance to the site will be the influencing factors for further stages of development.

Rolling hills sloping to meet lowland marshes characterize the basic relief of the Allegan County Landsite. Changes in elevation vary from a high of 823 feet in the southeast corner of the property to a low of 786.5 feet at the Jackson Lake shoreline. Testing of the lake bottom indicates an average depth of 21 feet. A major divide in the topography across the center of the site causes surface water in the southern areas to drain into Jackson Lake while the northern areas drain to a low, swampy area bordering the northeastern property line. The shape of the land and its drainage flow is of major importance to other features on the site and should not be altered in any way.

topography and drainage analysis



north

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Existing Contour L

Swamp Land Are

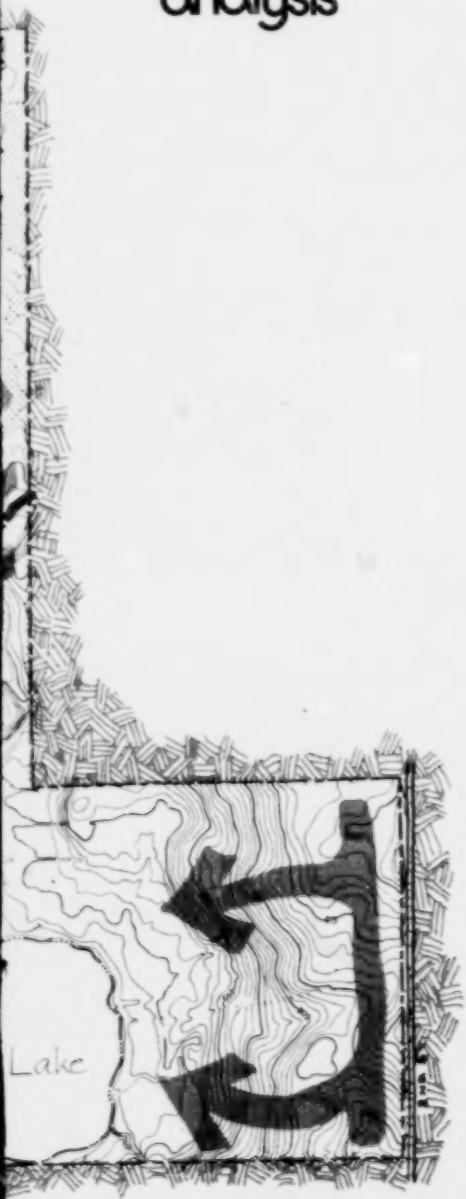
Ridge Line

Direction of Draina

Lake Shore Line

Legend

and drainage analysis



Existing Contour Lines

Swamp Land Areas

Ridge Line

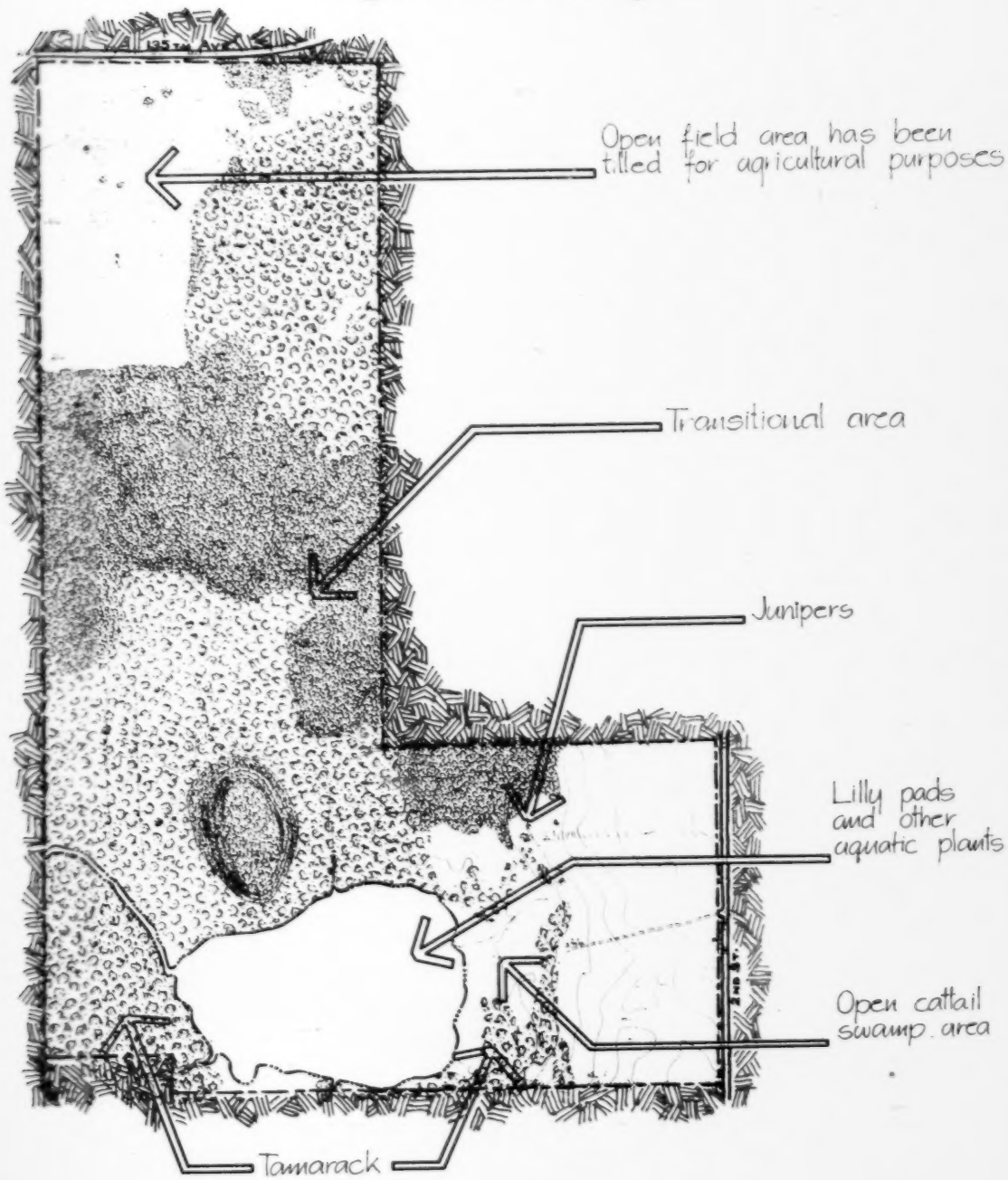
Direction of Drainage Flow

Lake Shore Line

Legend

Related closely to the basic relief of the land, a large variety of plant life can be found within the site. Beginning with the highest grounds on the site, a dense stand of Beech-Maple forests characterize these areas. As the land tends to slope downward, a transitional forest of mixed hardwoods is seen blending to the lowland associations of Elm, Willow, and soft Maple forests. The lake and its related shoreline and swamp areas present a new community of plant life such as cattails, lily pads, and a variety of marsh grasses. Evergreens such as Tamarack and Juniper are found bordering the southern property line. Abandoned agricultural fields to the southeast and northeast have begun to develop into open field associations. All these various associations are following a natural growth pattern dependent on their location and relation to the total area. To maintain the growth and development of these forests and swamp areas, they must not be changed or disturbed during the course of the site development program.

vegetation analysis



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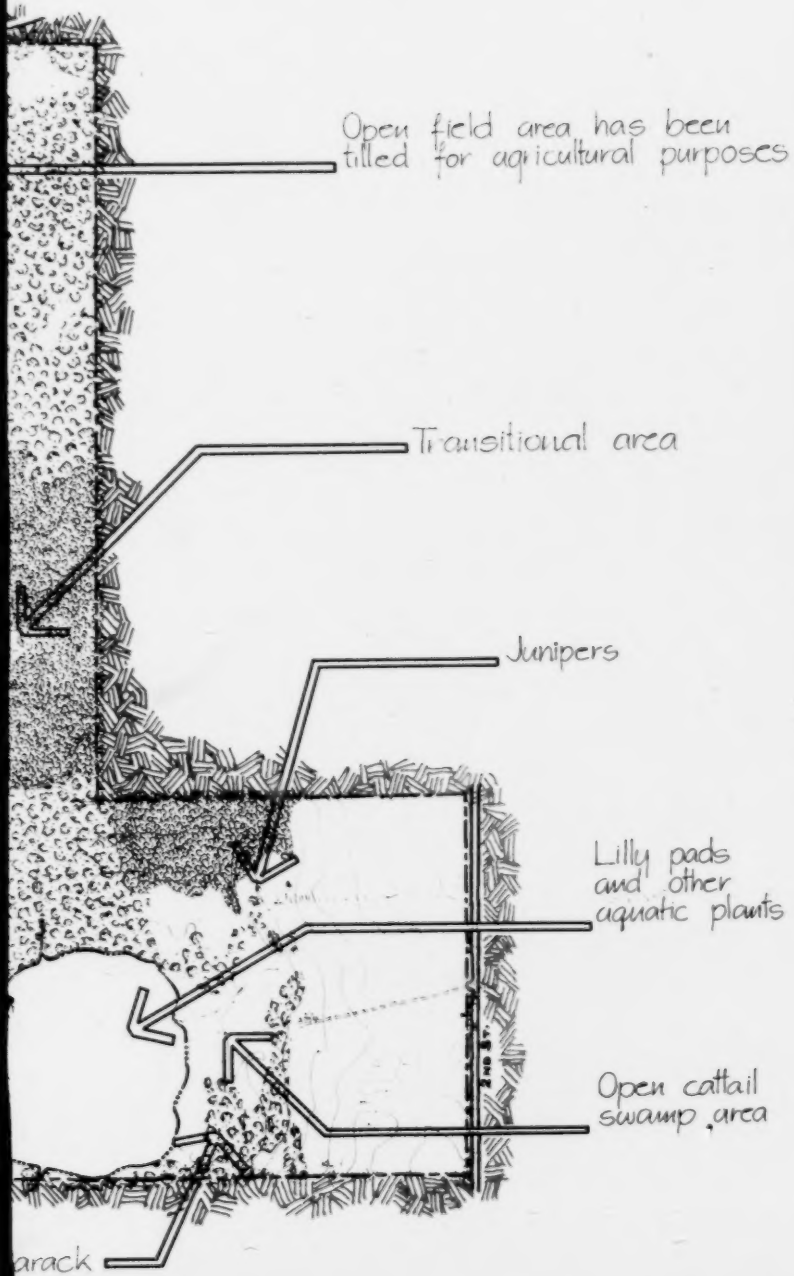


High Ground Forest Area - Beech, Maple

Lowland Vegetation - Soft Maple, Elm, Willow

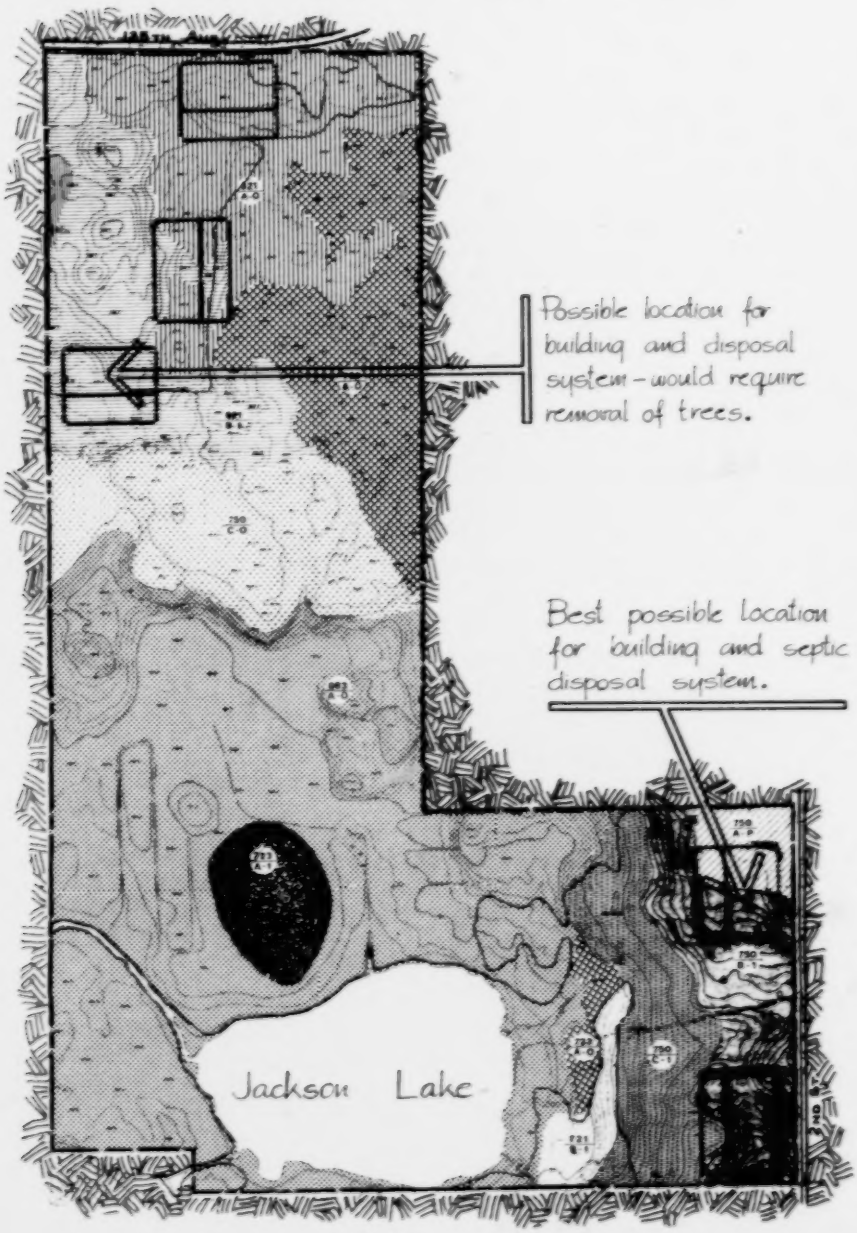
Legend

A key part of the site analysis is to determine various types of soils and their bearing and perculation capacities for possible construction of access roads, building sites, and disposal systems. A general look at the soil test results for the Allegan County site indicates a high water table over major portions of the area with poor perculation and bearing capacities for any type of major construction.

Testing in the northern portions indicates there is 30 to 40 inches of loamy sand over 2 to 6 inches of loam and sandy gravel. These types of soils are questionable as possible building locations and are not suited for any type of disposal system. One area along the west property line shows that a building and disposal system could be developed but would require the removal of large amounts of trees.

The southeastern property shows soils best suited for building and septic disposal. At elevations above 809 feet, the soil is a deep, well-drained fine sand. This area, being on high grounds, clear of trees, and near a major arterial for vehicular access to the site, would be the best suitable construction site for building facilities and would give easy pedestrian access to the overall site.

soil and sanitary analysis


Possible location for building and disposal system - would require removal of trees.
Best possible location for building and septic disposal system.
Jackson Lake

Carlyle M
0% - 2%
No Soil

Berrien Soi
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2% - 6%
0% - 25%
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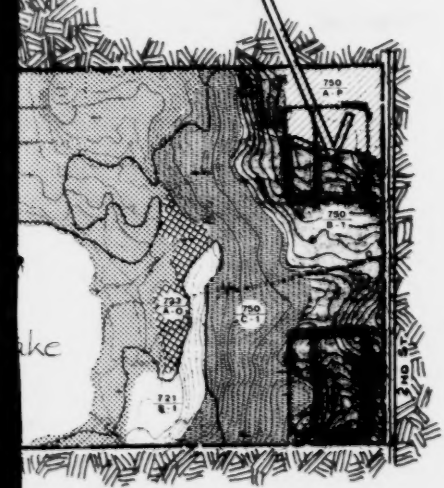
No Soil

itory analysis

Possible location for building and disposal system - would require removal of trees.

Best possible location for building and septic disposal system.



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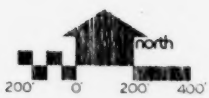


Carlyle Muck
0% - 2% Slope
No Soil Erosion

Berrien Sandy Loam
0% - 2% Slope
No Soil Erosion

Berrien Sandy Loam
2% - 6% Slope
0% - 25% Top Soil
Erosion by Water

Berrien Sandy Loam
2% - 6% Slope
0% - 25% Top Soil
Erosion by Water

Berrien Loamy Sand
2% - 6% Slope
0% - 25% Top Soil
Erosion by Water

Newton Loamy Sand
0% - 2% Slope
No Soil Erosion

Newton Loamy Sand
0% - 2% Slope
0% - 25% Top Soil
Erosion by Water

Plainfield Loamy Sand
0% - 2% Slope
0% - 25% Top Soil
Erosion by Wind

Plainfield Loamy Sand
2% - 6% Slope
0% - 25% Top Soil
Erosion by Water

Plainfield Loamy Sand
6% - 12% Slope
No Soil Erosion

Plainfield Loamy Sand
6% - 12% Slope
25% - 75% Top Soil
Erosion by Water

Best Possible Site for Building and Septic Disposal System

Legend

the planning

The physical planning of the site is the next phase of the site development program. The physical needs of the educational program such as living accommodations for visiting students and the ecological features existing on the site must now be combined to determine the use and type of development for various areas within the site. Refinement and review of collected information will lead to a Master Plan, the final stage of the site development program for the new Environmental Education Center.

land use

The conceptual relationship between the proposed activities needed for the educational program and the existing natural features on the site are illustrated in the Land Use Diagram. Specific activities are defined more clearly and placed in areas conducive to the type of development they will require.

BUILDING SITE AND ACCESS ROAD

To provide eating, sleeping, and study accommodations for students, a Learning Center will be constructed on the site. Situated high on a hill overlooking the surrounding woodlands and lake, the building will be easily accessible for vehicular circulation from 2nd street that borders the east property line. The open field area and good soil conditions will also allow the construction of a septic tank disposal system close to the existing road. Vehicular traffic will be directed to the Learning Center and will terminate at this point. All other circulation through the various ecological areas will be by pedestrian movement only. Handicapped students participating in the program will be provided with proper circulation needs both within and around the building site. Any architectural barriers such as curbs or steps will be designed to accommodate wheelchair and other movement needs allowing the handicapped greater use and access of the surrounding areas.

RECREATION AREA

Immediately adjacent to the Learning Center, an area for limited recreational activities will be provided. This informal area is intended to provide students and visitors with leisure activities such as badminton, volleyball, and soccer sports. Provisions for other activities such as swimming and boating will be available through the nearby Yankee Springs Recreation Area.

PRAIRIE AREA

The first of the ecological areas for the Environmental Education Center will be an open field prairie association. Being located close to the Learning Center, the prairie association will be of special interest and easy access for the younger children visiting the site. This area will need special development and management to achieve a good ecological prairie association.

AQUATIC STUDY AREA

The lake and its surrounding vegetation and wildlife will be used as an aquatic study area. A small dock and boat launch area will be needed to provide full access to the lake. No boats larger than row boats or canoes will be allowed use of the lake in order to maintain and preserve the area in its natural state.

OBSERVATION AREA

The major acreage of the site will be maintained in its natural state for study and observation of the ecological habitats existing within this forested and swamp land area. Children will gain access into the woods through a system of trails that will vary in length. Teaching stations will be designed along the trails pointing out the different habitats, varieties, and forms of natural features students will encounter. All vehicular traffic will be restricted from this area leaving students free to move and investigate the many elements they will find in this undistrubed, natural woodland.

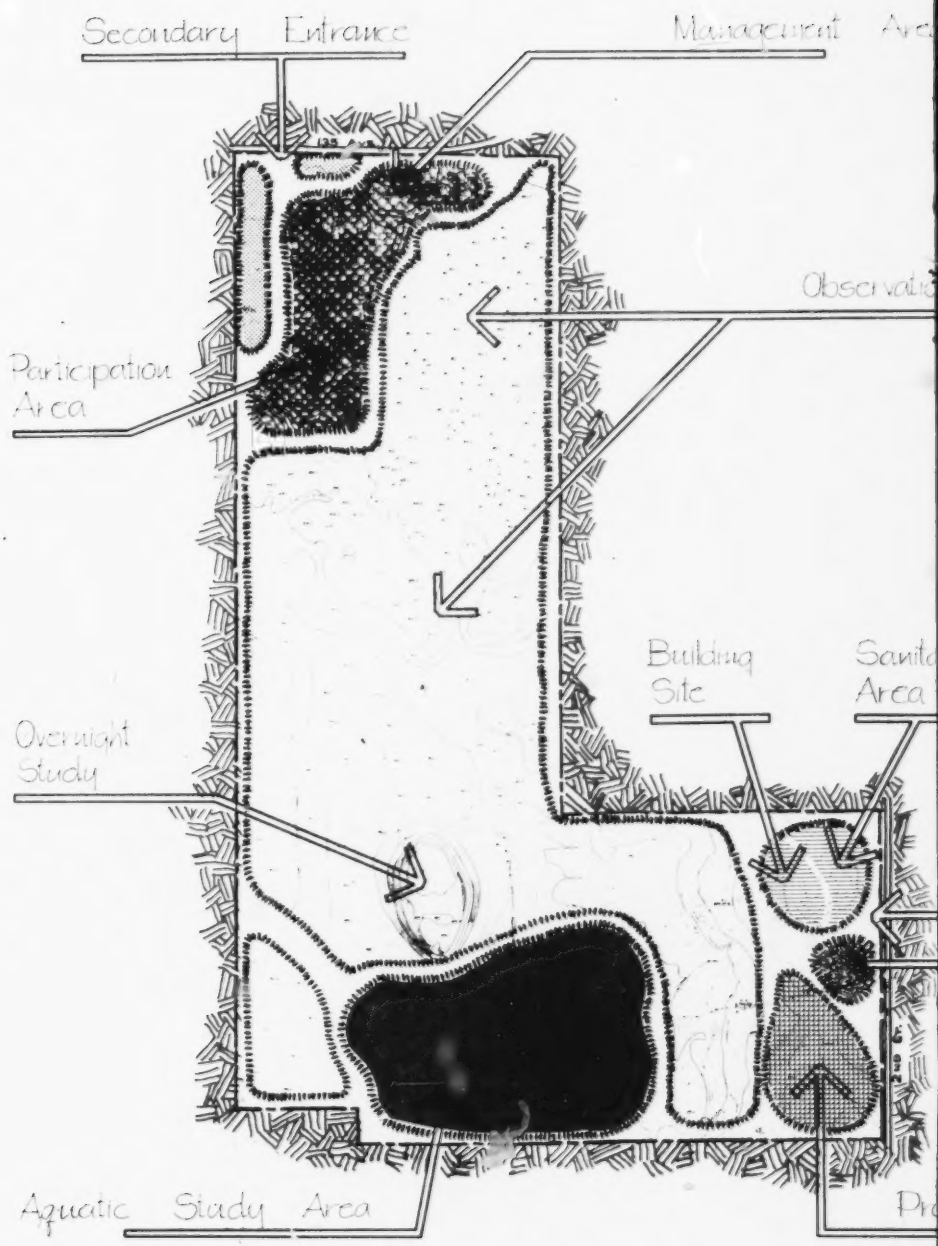
MANAGEMENT AND PARTICIPATION AREA

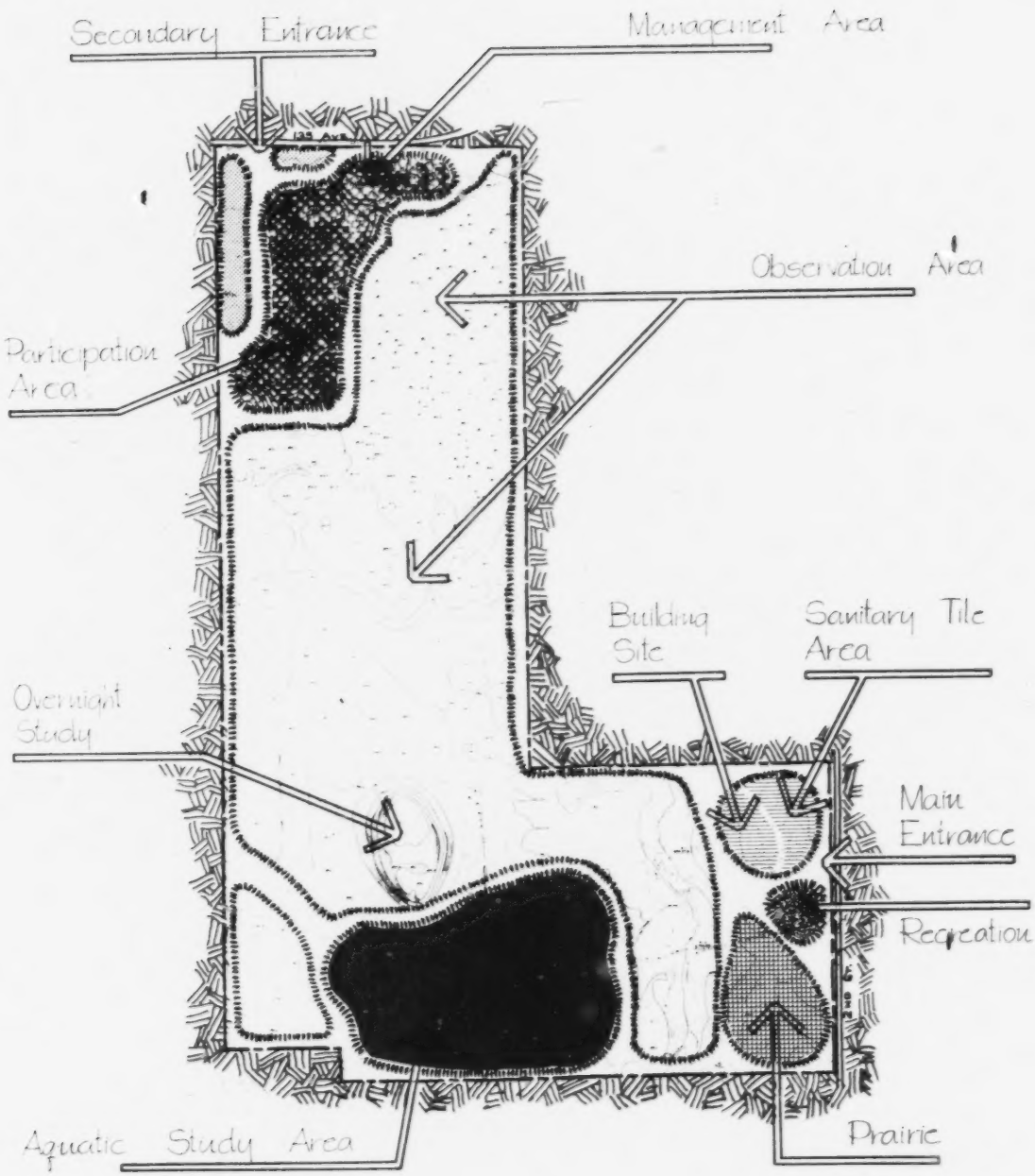
An abandoned agricultural field lying in the northeast corner of the site will be designated as an experimental work area for students to develop and carry out their own projects dealing with the ecological balance of nature. These projects will include tests involving such things as garden plots, nut groves, herb gardens, and natural succession. Being able to participate in experimental activities will help students gain a better appreciation and awareness of the ecological relationships found in nature.

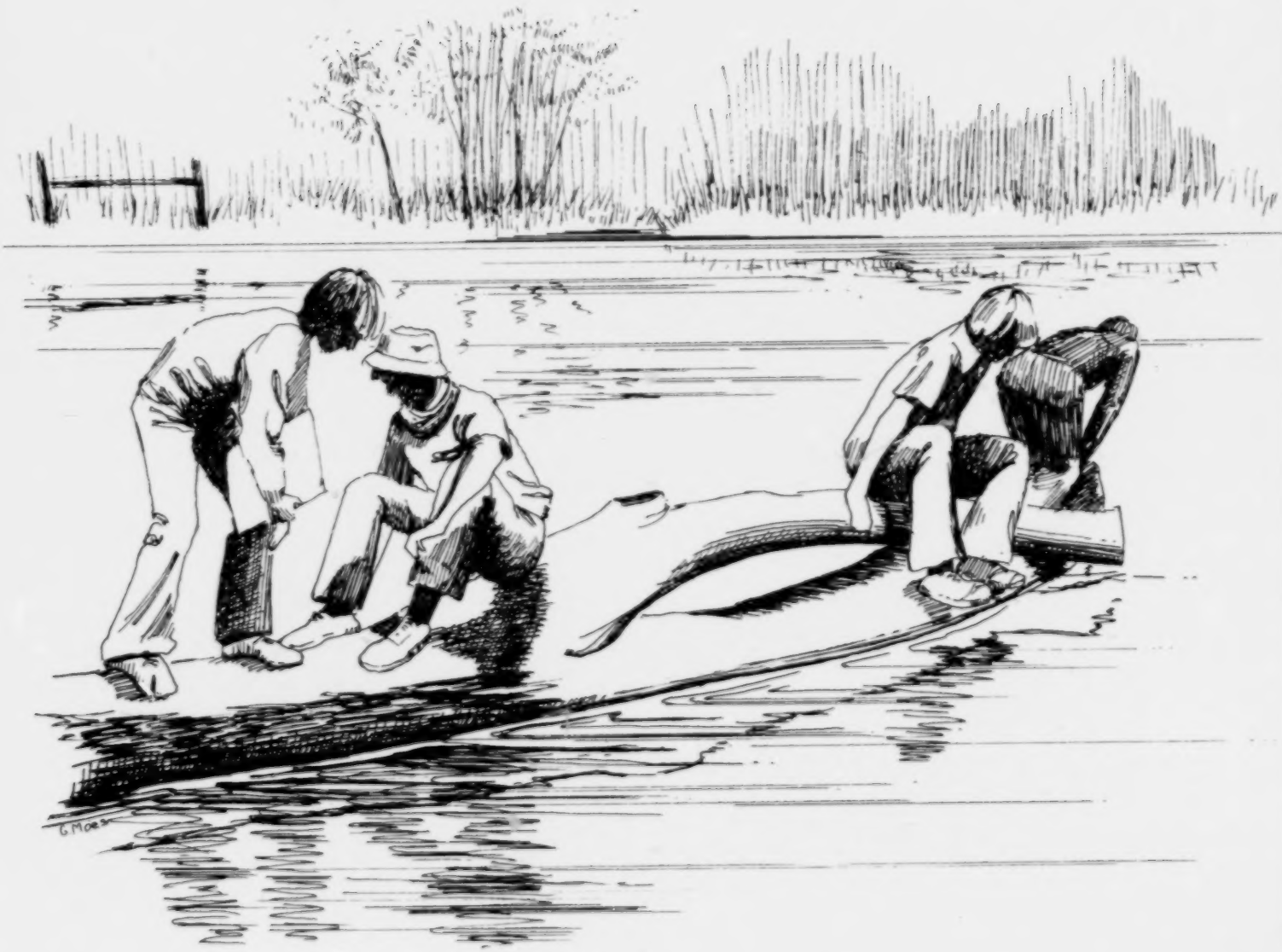
OVERNIGHT STUDY AREA

A special area has been set aside as an overnight camp area. Used only for the purpose of overnight observation of special features and wildlife, small groups of older students will camp at the top of a large hill located near the center of the site. At an elevation of 812 feet, many portions of the site can be seen from the top of the hill.

land use diagram




Secondary Entrance
Management Area
Observation Area
Participation Area
Building Site
Sanitary Tile Area
Overnight Study
Main Entrance
Recreation
Aquatic Study Area
Prairie


G.Mora

master plan

A refinement of the Land Use study and a more detailed investigation into the location of special features on the site leads to the development of the Master Plan for the Environmental Education Center. A system of trails has been developed related to the location of specific features, the topography of the site, the different ecological study areas, and by the age of the students visiting the Center.

OLD FIELD TRAIL

Beginning near the Learning Center, the old field trail, for use by elementary, junior and senior high students, winds through the prairie association area. Nine different teaching stations along the trail point out various elements such as old field vegetative patterns, prairie species, demonstration plots in field succession, bird houses, and tree study. An observation platform has been included on the trail for better overall viewing of the old field trail system.

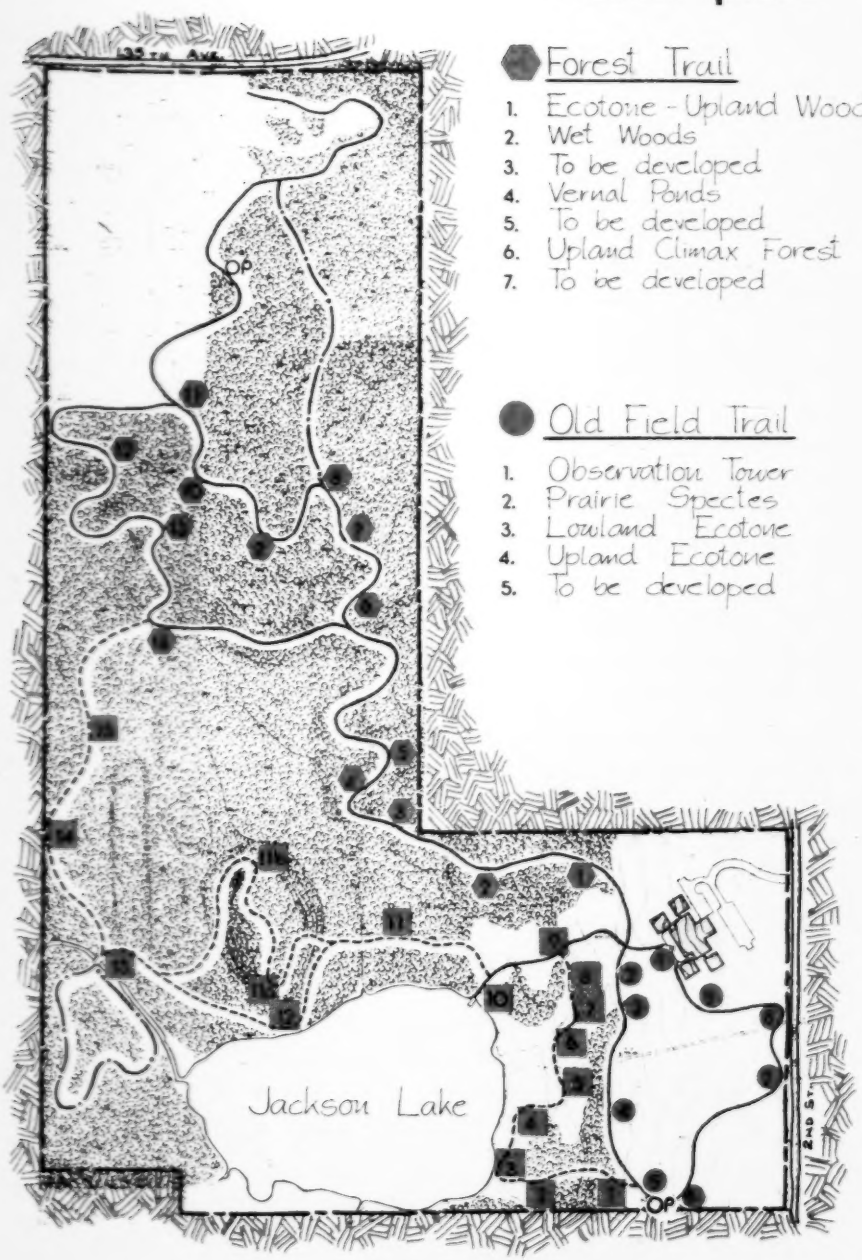
BOG AND LAKE TRAIL

The bog and lake trail will bring junior and senior high students to the lake and swamp area. Oak and field associations, bog and larch ecotones, poison sumac, aquatic plants, cold spring habitats, and marsh developments will be a few of the fifteen teaching stations observed along the trail. A small dock area along the north shoreline will act as an extension of the lake trail into the lake and will provide boating observation and test sampling of water life found in Jackson Lake.

FOREST TRAIL SYSTEM

Separate and combined trails for elementary, junior, and senior high students will make up the forest trail system. Winding through the major acreage of the site, these trails will include 14 teaching stations pointing out such elements as upland ecotones, vernal ponds, climax forests, vines, flooded lowlands, and wooded ponds. Less accessible trails for senior high students will be developed through the lowland bog and swamp areas and will provide pedestrian access to the management and participation area. Another observation platform will be provided on the edge of the woods to view the overall forest trail area.

master plan



Forest Trail

1. Ecotone - Upland Woods
2. Wet Woods
3. To be developed
4. Vernal Ponds
5. To be developed
6. Upland Climax Forest
7. To be developed
8. Wooded pond
9. Understory Regrowth
10. Outdoor Classroom
11. Ecotone - Beech-Maple
12. Vines
13. To be developed
14. Flooded Woods

Old Field Trail

1. Observation Tower
2. Prairie Species
3. Lowland Ecotone
4. Upland Ecotone
5. To be developed
6. Observation Platform
7. Fence Row
8. Maple Tree
9. Oak Tree

Bog and Lake Tra

1. Ecotone - Oak and Fi
2. Ecotone - Larch and
3. Spring Inlet
4. Pitcher Plants
5. Poison Sumac
6. Edge of Spring
7. Head of Spring
8. To be developed
9. Marsh
10. Dock - Aquatic Plants
11. Bridge

11a & b Observation Site

12. Lake Edge
13. Stream Edge
14. Grazing Effects Site
15. To be developed

master plan

Forest Trail

1. Ecotone - Upland Woods
2. Wet Woods
3. To be developed
4. Vernal Ponds
5. To be developed
6. Upland Climax Forest
7. To be developed
8. Wooded pond
9. Understory Regrowth
10. Outdoor Classroom
11. Ecotone - Beech-Maple Forest
12. Vines
13. To be developed
14. Flooded Woods

Old Field Trail

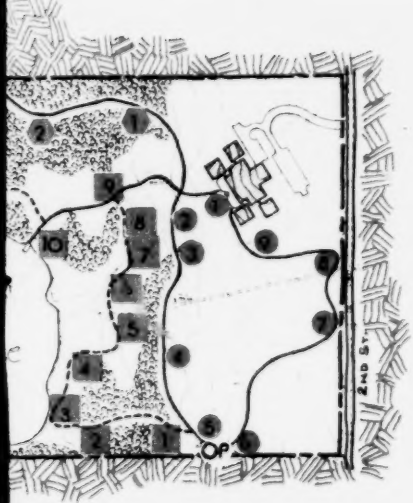
1. Observation Tower
2. Prairie Species
3. Lowland Ecotone
4. Upland Ecotone
5. To be developed
6. Observation Platform
7. Fence Row
8. Maple Tree
9. Oak Tree

Bog and Lake Trail

1. Ecotone - Oak and Field
2. Ecotone - Larch and bog
3. Spring Inlet
4. Pitcher Plants
5. Poison Sumac
6. Edge of Spring
7. Head of Spring
8. To be developed
9. Marsh
10. Dock - Aquatic Plants
11. Bridge

11a & b Observation Site

12. Lake Edge
13. Stream Edge
14. Grazing Effects Site
15. To be developed



Senior High Trail

Junior & Senior High Trail

Junior High, Senior High & Elementary Trail

OP Observation Platform

Legend

building and site planning

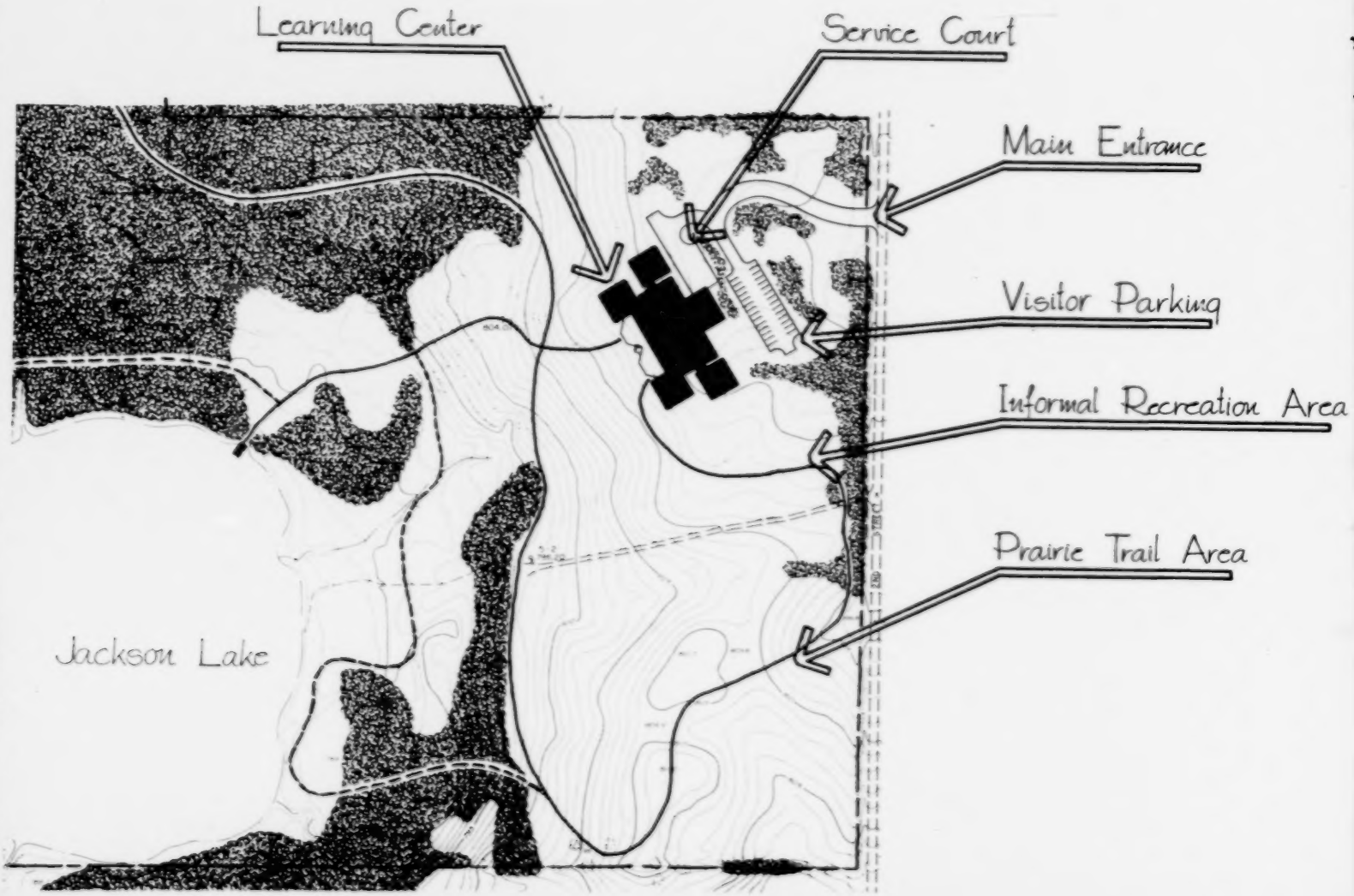
A further breakdown of the Master Plan focuses on the Building Site and Building Plan. Being the central core for living and study activities at the Environmental Education Center, the development of the Learning Center must be carefully studied and designed to meet the needs of the educational program and the children using the facilities. A conceptual study of the building location, orientation, and interior circulation has been developed to provide better insight to the needs and design of the Learning Center.

BUILDING SITE

The location of the Learning Center on the building site will help regulate the pedestrian and vehicular flow to and from the Environmental Education Center. The proposed building location has been set back from the existing road and is served by a curved access drive terminating at the building. The drive will be used by both service vehicles and passenger autos such as cars and buses. Ample parking space has been provided with separate service court areas for pick-ups and deliveries.

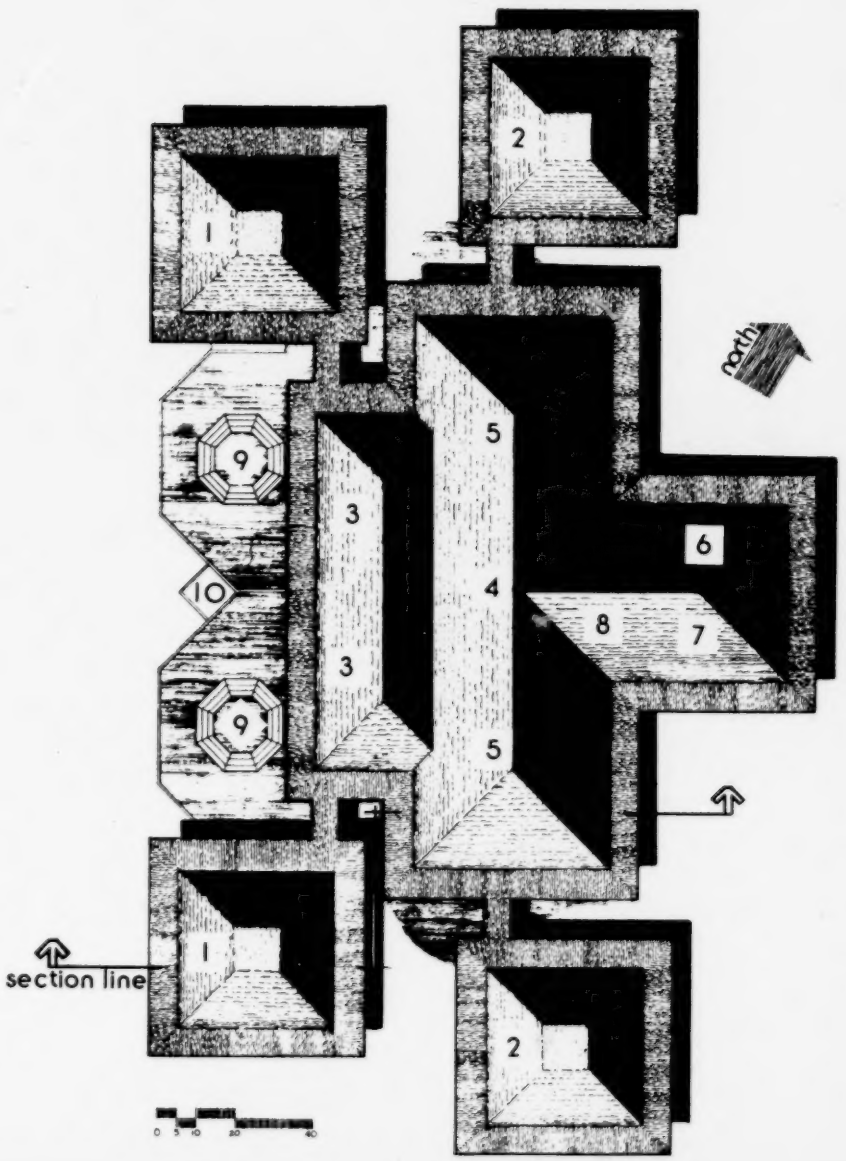
The building is oriented towards the major acreage of the site providing excellent views of the lake and woodlands and easy pedestrian movement to the different ecological study areas. Being placed at an angle to the road, the Learning Center will direct main attention to the natural environment rather than the road and access drive. Additional plantings added to existing scattered trees will help screen the road and drive from the Learning Center and will provide a natural protective barrier from vehicular movement for children on the site.

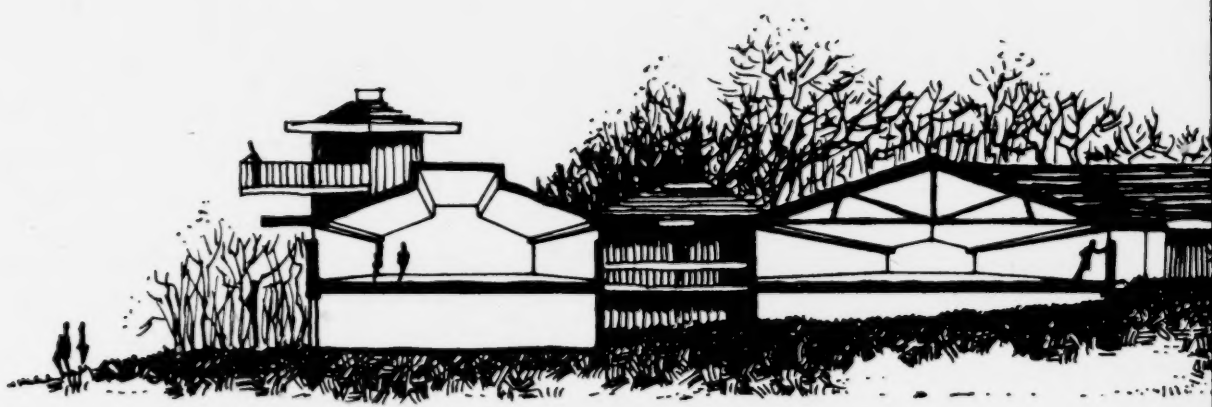
building site plan



building concept

1. Male Complex Unit
2. Female Complex Unit
3. Classrooms
4. Kitchen
5. Dining & Classroom
6. Food Storage
7. Director
8. Reception
9. Deck Instructional Area
10. Observation Tower



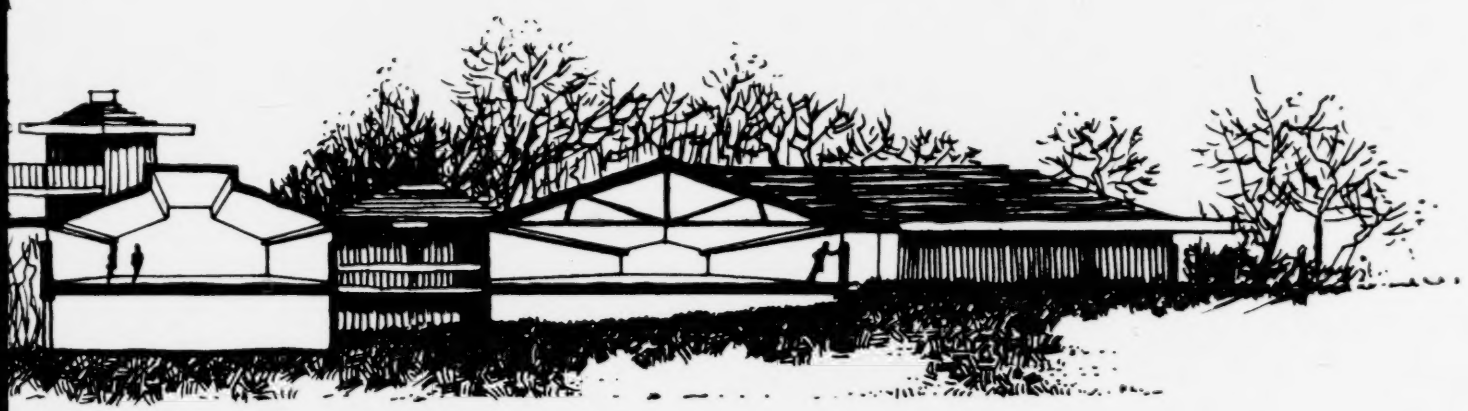


BUILDING PLAN

Students participating in the educational program should be able to experience an awareness and appreciation of their natural environment both indoors and out. The exterior handling of the building as well as its interior spaces should reflect and draw the natural environment into the building and blend in character with its natural surroundings. Interior and exterior building materials should be of a natural nature such as brick, field stone, rough sawn wood, and glass.

The layout plan for the building has been based on the program calling for living, eating, and study accommodations for approximately 200 children and 20 staff members on a weekly basis. Two separate groups of students will be using the Learning Center at the same time and should be provided with separate facilities for their individual programs.

To best serve the students, a centralized kitchen has been designed to serve two separate dining halls on either side. The dining halls are spacious and will be used as multi-purpose centers for both study and recreational needs. Classrooms are incorporated into the multi-purpose space and will allow both large and small groups of students to discuss and further investigate the ecological projects they may choose to carry out. Four complex units joined to the central eating and study spaces provide male-female sleeping accommodations and bathroom facilities. A wood deck system, connecting the complex units and central building, provides further outdoor instruc-



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SQUARE FOOTAGE ESTIMATES FOR THE LEARNING CENTER

Kitchen	1,800 sq. ft.
Dining	4,500 sq. ft.
Classrooms	2,700 sq. ft.
Complex Units	6,400 sq. ft.
Reception and Director	1,125 sq. ft.
TOTAL	16,525 sq. ft.

summary

The research and information produced in the course of this study indicates that the physical aspects of the Allegan County Landsite parallels and compliments the goals of the Environmental Education Program. Children's sensitivity development to the natural habitat will be guided by well planned and flexible programs oriented to the rich variety and continually changing characteristics found in this area. Successful environmental education requires not only a wide variety of natural resources to be experienced by the students, but also a variety of natural phenomena which is actively changing with the seasons and the natural succession of the ecological communities unique to this site. Future expansion and change in program needs will be a joint product of the participation of parents, children and educational faculty, and the natural succession of a constantly changing and maturing area.

Costs which might normally be associated with a project of this scope have already been absorbed through the acquisition cost of this particular landsite. Its unique natural features require little, if any, artificial construction of natural features and provides all the physical aspects required by the program. The trails and teaching stations will be constructed on a non-permanent basis allowing their location to change and fluctuate as the land itself matures and transforms. The projected costs for the construction of the Learning Center will be the only major cost incurred during the site development. Careful planning and designing of the building to integrate it with its surroundings and to provide for present and future program needs will help keep costs at a minimum.

The intent of this program and the unique site to which it will be applied will give children of the Lansing School District an outstanding opportunity to observe and study the natural environment. Their knowledge and understanding of the natural environment will increase awareness and appreciation for environmental quality in all aspects of life.

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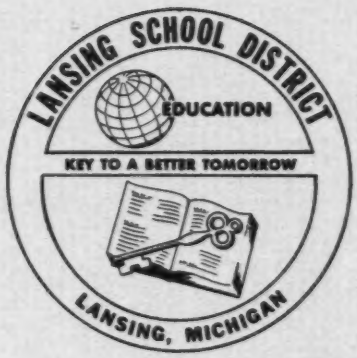

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